



Attorney Docket No. 0756-2228

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Hongyong ZHANG et al.

Serial No. 09/726,337

Filed: December 1, 2001

For: A SEMICONDUCTOR DEVICE

HAVING CHANNEL FORMATION

REGION COMPRISING SILICON

AND CONTAINING GROUP IV

ELEMENT

) Group Art Unit: 2823

) Examiner: W. Coleman

) CERTIFICATE OF MAILING

) I hereby certify that this correspondence is being  
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) P.O. Box 1450, Alexandria, VA 22313-1450, on  
) August 25, 2003.

**RESPONSE**

Honorable Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The Official Action mailed February 25, 2003, has been received and its contents carefully noted. A *Notice of Appeal* was filed on June 25, 2003. This response is filed within two months of the filing date of the *Notice of Appeal*, and therefore is believed to be timely without extension of time.

Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on January 31, 2001; September 10, 2001, October 15, 2001, February 14, 2002; February 25, 2002; May 1, 2002, and November 25, 2002. A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 2-23 are pending in the subject application of which claims 2-7 are independent. Applicant notes with appreciation the Examiner's time in conducting a personal interview on July 10, 2003. As explained more fully below, during the interview, it was noted that the cited prior art references do not teach the claimed

invention since the prior art references do not have a channel structure as claimed. All claims are now believed to be in condition for allowance and favorable reconsideration is requested.

The present invention relates to a semiconductor device have a TFT. More specifically, the TFT has a channel forming region, a source region and a drain region, wherein the channel formation region comprises a Group IV element other than silicon and wherein a plurality of crystalline grains extend in the same direction.

Paragraph 8 of the Official Action rejects claims 2 and 3 as anticipated by U.S. Patent 5,422,302 to Yonehara. It is well established that "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

As discussed during the interview, it is respectfully submitted that Yonehara fails to disclose a channel formation region comprising a plurality of crystal grains extending in a same direction. Rather, Yonehara is directed to a single crystalline grain. Although column 2, line 38, discloses "polycrystal," this disclosure is directed to multiple single crystal islands (that is "poly-single crystalline islands") as shown in Figure 10 and disclosed in column 8, lines 51-54. Furthermore, Yonehara discloses in Figure 15 that each transistor is formed in a single crystalline island as described in column 15, lines 12-27. Therefore, Yonehara does not disclose a channel formation region comprising a plurality of crystal grains extending in a same direction. In fact, Yonehara teaches away from the subject invention by teaching the use of a single crystalline structure for forming a channel region of the transistor. Therefore, since Yonehara fails to teach each and every feature recited in the claims, it is respectfully submitted that Yonehara cannot anticipate the claims of the present application and reconsideration is requested.

Paragraph 10 of the Official Action rejects claims 4, 5, 6, 7, 12, 15, 18, and 21 as anticipated by EP 0390 608 to Yonehara. It is respectfully submitted that Yonehara '608 fails to teach each and every feature recited in the claims and thus cannot anticipate the claims. Specifically, Yonehara '608 discloses semiconductor grains

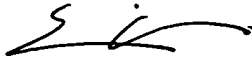
extending in all directions with a region containing Sn atoms as a center of crystallization and does not disclose grains extending in the same direction as claimed. It was understood during the interview, that it was agreed that this reference did not appear to teach the above discussed features. Although the Official Action rejected several claims as anticipated by the '608 reference, it was understood that this reference was cited primarily for the teaching of Sn and the concentration recited in claim 4, for example. Reconsideration is requested in view of the above.

Paragraph 14 of the Official Action rejects claims 8 and 10 as obvious based on the combination of Yonehara '302 as applied to claims 2 and 3, and Yonehara '608. Paragraph 16 of the Official Action rejects claims 9, 11, 14, 16, 17, 20 and 23 as obvious based on the combination of Yonehara '302, Yonehara '608, and U.S. Patent 5,294,560 to Ono. Paragraph 18 of the Official Action further rejects claims 13, 16, 19, and 22 as obvious based on the combination of Yonehara '302, Yonehara '608 as applied to claims 2, 3, 4, 5, 6, 7, 8, 10, 12, 15, 18, and 21, and U.S. Patent 4,740,829 to Nakagiri. It is respectfully submitted that Nakagiri and Ono both fail to overcome the discrepancies noted above and that the combination of Yonehara '302, Yonehara '608, Ono, and Nakagiri, whether taken alone or in combination, fails to disclose each and every feature of the present invention. Therefore, a *prima facie* case of obviousness cannot be maintained and favorable reconsideration is requested.

Paragraph 23 of the Official Action rejects claims 4-7 and 12-23 under the doctrine of obviousness-type double patenting based on claims 1-26 of U.S. Patent 6,160,279. It is respectfully requested that this rejection be held in abeyance until such time as allowable subject matter is indicated. At that time, any remaining double patenting rejections will be fully addressed.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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